

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex Parte ROBERT W. CALLAHAN, RON W. CALL,
KEN J. HARLESON and TA-HUA YU

Appeal No. 2003-0029
Application 09/385,933

ON BRIEF

Before, KIMLIN, KRATZ and JEFFREY T. SMITH, *Administrative Patent Judges*.

JEFFREY T. SMITH, *Administrative Patent Judge*.

Decision on appeal under 35 U.S.C. § 134

Applicants appeal the decision of the Primary Examiner finally rejecting claims 1 to 15.^{1,2} We have jurisdiction under 35 U.S.C. § 134.

¹ In rendering our decision, we have considered Appellants' arguments presented in the Substitute Brief, filed January 10, 2002.

² According to Appellants, claims 16-20 have been withdrawn from consideration. (Brief, p. 2).

BACKGROUND

The invention generally relates to split resistant single layer or co-extruded multilayered microporous membranes. The microporous membrane is made by a process that includes preparing a film precursor by a blown film extrusion process at a blow up ratio of at least 1.5, annealing the film precursor and stretching the resultant annealed film to form the microporous membrane. (Specification, p. 2). According to Appellants, the claimed invention has a tear resistance in the transverse direction of at least 50 kgf/cm². (Brief, p. 3). The claimed invention is useful in the formation of battery separators. Claims 1 and 7, which are representative of the invention, are reproduced below:

1. A microporous membrane comprising a microporous membrane having at least 80% by weight of a polymer selected from the group consisting of polypropylene, polyethylene, and a copolymer thereof, and having a tear resistance in the transverse direction of at least about 50 kgf/cm², said membrane being a single layer or a co-extruded multi-layer membrane.

7. A microporous membrane which comprises at least 80% by weight of a polymer selected from the group consisting of polypropylene, polyethylene, and a copolymer thereof, said microporous membrane being a single layer or a co-extruded multi-layer membrane and being prepared by a process comprising:

extruding a film precursor by a blown film method at a blow-up ratio of at least about 1.5;

annealing said film precursor; and

stretching the resulting annealed film precursor to form said microporous membrane.

As evidence of unpatentability, the Examiner relies on the following references:

Yu et al. (Yu '281)	5,565,281	Oct. 15, 1996
Best et al. (Best)	5,635,262	Sept. 16, 1997
Yu et al. (Yu '911)	5,667,911	Jun. 03, 1997

The Examiner rejected claims 1 to 10 and 12 to 15 under 35 U.S.C. § 103(a) over the combination of Yu '281 and Best; and claims 7, 8, 11 and 14 under 35 U.S.C. § 103(a) over the combination of Yu '911 and Best. (Answer, pp. 3-8).

We have thoroughly reviewed each of the Examiner's reasons for the rejection of the claimed subject matter. However, we are in complete agreement with the Appellants that the claimed subject matter would not have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the applied prior art. Accordingly, we will not uphold the Examiner's rejections.

Best discloses the process for forming a **nonporous** film by extrusion and blow molding wherein the blow-up ratio exceeds 1.5. (Col. 2, 22 to 33 and the Examples). The film preferably comprises 90 to 99 percent polyethylene. (Col. 3, ll. 29 to 33).

Best discloses that the puncture propagation tear in both the machine and transverse directions is important for determination of real world performance of the film. The invention of Best differs from the claimed invention in that the film is not microporous.

Yu '281 discloses the formation of microporous films from polymers comprising a majority of a polypropylene, polyethylene, or a copolymer thereof. The microporous films are useful in the formation of battery separators. (Col. 3). Yu '281 discloses that puncture strength is a concern in the formation of battery separators. (Col. 2, ll. 11 to 15). Yu '281 discloses that the microporous films are formed by blown film extrusion process, annealing the film and stretching the resultant annealed film to form the microporous film. (Col. 2, ll. 43 to 55). In the exemplified embodiment of Yu '281, the precursor to the microporous film is extruded at a blow up ratio of 1.

Yu '911 discloses the formation of microporous films from polymers comprising a majority of a polypropylene, polyethylene, or a copolymer thereof. The microporous films are useful in the formation of battery separators. (Cols. 3-4). Yu '911 discloses that puncture strength is a concern in the formation of battery separators. (Col. 1, ll. 27 to 36). Yu '911 discloses that the microporous films are

formed by a blown film extrusion process, annealing the film and stretching the resultant annealed film to form the microporous film. (Col. 3, l. 57 to col. 4, l. 4). Yu '911 discloses the film is formed by blown film extrusion, however, the blow up ratio is not specified.

The Examiner's motivation for combining the teachings of Best with either Yu '218 or Yu '911 is the same and appears on pages 6 and 7 of the Answer.

Specifically, the Examiner concludes "it would have been obvious to the skilled artisan at the time the invention was made to combine the teachings of Yu ('281) [Yu '911] and Best motivated by the desire to produce a microporous membrane with improved tear resistant properties in order to produce a battery separator with increased durability." (Answer, p. 6) [for Yu '911, see page 7].

When determining the patentability of a claimed invention which combines known elements, "the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination. [Citations omitted]." *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984). In the present case, we answer this question in the negative. The Examiner asserts that it would have been obvious to one skilled in the art to optimize the tear

resistance of the microporous membrane. (Answer, pp. 4 and 8). The films of Best are nonporous and the films of Yu' 281 are porous. Best provides a discussion of tear resistance, however, the Yu references are silent. There is no recognition in the Yu references that the blow up ratio is a result effective variable for tear resistance. The Examiner has not adequately explained why there is a reasonable expectation that the tear resistance properties of a nonporous film would be the same or provide an advantage to a porous film.

The Yu references and Best discuss the puncture resistance of polypropylene and polyethylene films. The data in the present specification, page 15, shows that the puncture resistance of the microporous film decreases as the blow-up ratio increases. Thus, the Examiner's arguments regarding improved durability is not supported on this record.

The present record indicates that the motivation relied upon by the Examiner for using an extrusion process with a blow-up ratio other than 1 to provide a microporous film with a tear resistance in the transverse direction of at least about 50 kgf/cm² comes from the Appellants' description of their invention in the specification rather than coming from the applied prior art and that, therefore, the Examiner used

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impermissible hindsight in rejecting the claims. *See W.L. Gore & Associates Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983); *cert. denied* 469 U.S. 851 (1984) *In re Rothermel*, 276 F.2d 393, 396, 125 USPQ 328, 331 (CCPA 1960). Consequently, the Examiner's rejections are reversed.

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CONCLUSION

The rejection of claims 1 to 10 and 12 to 15 under 35 U.S.C. § 103(a) over the combination of Yu '281 and Best; and claims 7, 8, 11 and 14 under 35 U.S.C. § 103(a) over the combination of Yu '911 and Best are reversed.

REVERSED

EDWARD C. KIMLIN
Administrative Patent Judge

PETER F. KRATZ
Administrative Patent Judge

JEFFREY T. SMITH
Administrative Patent Judge

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